

## JAPANESE PATENT OFFICE -- Patent Abstracts of Japan

Publication Number: 63018077 A

Date of Publication: 1988.0125

Int. Class: C23C 16/26

Date of Filing: 1986.07.08

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METHOD AND APPARATUS FOR SYN-  
THESIZING HARD CARBON FILM

### Abstract

**PURPOSE:** To synthesize a hard carbon film at a low energy density and a high growth rate by projecting ultraviolet light on a gaseous carbide contg. chlorine as a reactive gas to disintegrate the carbide and by depositing produced active carbon atoms on a heated substrate.

**CONSTITUTION:** A gaseous carbide contg. chlorine such as carbon tetrachloride is fed into a reactor 1 from a gas feeder 3 through a flow rate controller 3a. A substrate S is heated to a proper temp. with a heater 14a controlled with a temp. controller 14 and ultraviolet light generated from an ultraviolet light generator 2 is projected on the surface of the substrate S through a lens 11b and a window 1a. The carbide irradiated with the ultraviolet light is photo-disintegrated to produce a large amount of active carbon atoms and a hard carbon film grows on the surface of the substrate S at a high rate. During the growth, an inert gas as a purge gas is fed into a tube 1b from a feeder 4 to prevent a reaction product in the reactor 1 from entering the tube 1b, so the window 1a is kept clean.

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